In the Claims:

Claims 5, 6 and 8-10 are amended herein. The remaining claims are not amended in this response.

1. (original) A method of producing an optical fiber-processing phase mask having a repeating pattern of grating shaped grooves and strips provided on one surface of a transparent substrate, so that diffracted light produced by the repeating pattern is applied to an optical fiber to fabricate a diffraction grating in the optical fiber by interference fringes of diffracted light of different orders, said method being characterized in that in making a mask having a plurality of juxtaposed patterns having a linearly or nonlinearly increasing or decreasing pitch and a uniform groove strip width ratio, multiple exposure is carried out to minimize difference between a pitch at a joint between patterns having different pitch data and a pitch in each individual pattern.

2. (original) A method of producing an optical fiber-processing phase mask according to claim 1, wherein when said plurality of patterns having different pitch data are written in juxtaposition with each other by multiple exposure, multiple writing operations are carried out in a same direction.

3. (original) A method of producing an optical fiber-processing phase mask according to claim 1, wherein when said plurality of patterns having different pitch data are written in juxtaposition with each other by multiple exposure, multiple writing operations are carried out in opposite directions.

4. (original) A method of producing an optical fiber-processing phase mask according to any one of claims 1 to 3, wherein said repeating pattern of grating shaped grooves and strips has a pitch varying between 0.85 μm and 1.25 μm.

5. (currently amended) A method of producing an optical fiber-processing phase mask according to any one of claims 1 to 4 3, wherein a difference in height between the grooves and strips of said repeating pattern of grating-shaped grooves and strips is of such a magnitude that a phase shift of approximately π occurs when ultraviolet radiation for processing the optical fiber passes through said phase mask.

6. (currently amended) A method of producing an optical fiber-processing phase mask according to any one of claims 1 to 4 3, wherein said repeating pattern of grating shaped grooves and strips is based on writing data concerning a basic pattern consisting of one groove and one strip, and said patterns of grooves and strips having different pitches are continuously

written by using the writing data concerning the basic pattern while varying a reduced scale for said writing data.

7. (original) A method of producing an optical fiber-processing phase mask according to claim 6, wherein a change in pitch according to position of said repeating pattern of grating shaped grooves and strips is determined according to a change in pitch of the diffraction grating to be fabricated in the optical fiber and given by a change according to the reduced scale for said writing data

8. (currently amended) A method of producing an optical fiber-processing phase mask according to any one of claims 1 to ~~7~~ 3, wherein writing is performed by an electron beam writing system.

9. (currently amended) A method of producing an optical fiber-processing phase mask according to any one of claims 1 to ~~7~~ 3, wherein writing is performed by a laser beam writing system.

10. (currently amended) An optical fiber with a Bragg diffraction grating characterized by being fabricated by using an optical fiber-processing phase mask produced by the method according to any one of claims 1 to ~~9~~ 3.

11. (original) An optical fiber with a Bragg diffraction grating according to claim 10, which is used to compensate for dispersion of the optical fiber.

12. (original) An optical fiber with a Bragg diffraction grating according to claim 11, wherein a group delay ripple is within ±10 ps.